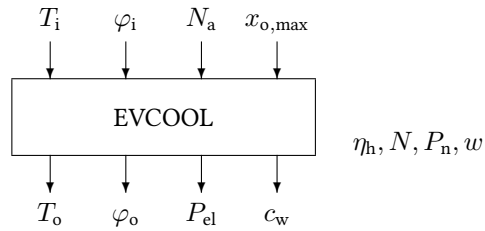


## Block EVCOOL

The EVCOOL block simulates an evaporative cooler (humidifier).



|                   |        |
|-------------------|--------|
| <b>Name</b>       | EVCOOL |
| <b>Function</b>   | st0006 |
| <b>Inputs</b>     | 4      |
| <b>Outputs</b>    | 4      |
| <b>Parameters</b> | 4      |
| <b>Strings</b>    | 0      |
| <b>Group</b>      | S      |

### Inputs

- 1 Inlet temperature  $T_i / ^\circ\text{C}$
- 2 Relative humidity  $\varphi_i$
- 3 Number of active stages  $N_a$
- 4 Maximum absolute humidity  $x_{o,\max} / \text{g kg}^{-1}$

### Outputs

- 1 Outlet temperature  $T_o / ^\circ\text{C}$
- 2 Relative outlet humidity  $\varphi_o$
- 3 Electricity consumption  $P_{\text{el}} / \text{W}$
- 4 Water consumption  $c_w / \text{g kg}^{-1}$

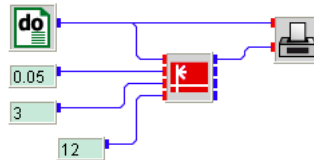
### Parameters

- 1 Humidification efficiency  $\eta_h$
- 2 Number of stages  $N$
- 3 Nominal electricity consumption  $P_n / \text{W}$
- 4 Water consumption factor  $w$

### Strings

None

evcool.vseit



An three-stage evaporative cooler with a humidification efficiency of 0.9 and a nominal electricity consumption of 50 W is simulated by the **EVCOOL** block. The water consumption factor is set to 1.3.

The inlet temperature is varied by a **DO** block between 20 and 100 °C in steps of 1 °C. The outlet temperature is plotted as a function of the inlet by a **PLOT** block.

The other inputs of the **EVCOOL** block are defined through **CONST** blocks to a relative humidity of the inlet air of 50 percent. The number of active stages is set to 3, the maximum absolute humidity is restricted to 12 kg water per kg air.

